THE CRISIS OF 1920 IN THE UNITED STATES: A QUANTITATIVE SURVEY

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In November, 1918, our industries were straining to meet war demands; the government was regulating foreign trade, building ships, running the railroads, and issuing bonds; and commodity prices had reached a level more than twice that of 1913. Upon the ending of the war many careful observers predicted a collapse of prices and disorganization of industry. During the first three or four months after the Armistice security prices did recede somewhat, commodity prices fell about 5 per cent on the average, and business was dull, but there was not a collapse. In the spring of 1919 an enormous foreign demand for goods and post-war buying of our own population combined to start an unprecedented rise of commodity prices and a tremendous upswing in business activity. The rising tide of business in 1919 was first preceded and then accompanied by rising stock prices. The expansion of business and the increase of prices were facilitated by low money rates. The continuance of low commercial rates throughout 1919 was made possible, directly, by the policy of the Federal Reserve Board in holding rediscount rates on a level with the rate on Liberty bonds and, indirectly, by the financial requirements of the government which dictated this policy.

In November, 1919, following six months of rapidly expanding business, the federal reserve banks increased the rediscount rates slightly. The change in rates was significant not in itself but because it indicated a change of federal reserve policy. The only immediate effect of the rates was a break in security prices, a break inaugurating a bear market which was to continue through 1920 and the first half of 1921.

During the autumn and winter of 1919-20 business expansion continued at a feverish pace and commodity prices increased month after month at an unprecedented rate. It was not until May, 1920, when the index of the Bureau of Labor Statistics reached 272, that the upward movement was checked and a downward swing definitely inaugurated. Meanwhile the federal reserve banks had increased the rediscount rates bit by bit until the maximum rate of 7 per cent was attained in June.

The crisis of 1920, like every other crisis, caught the great majority of business men unprepared. Purchasers were doubling and trebling orders with the object of securing deliveries of the normal amounts, sellers were boosting prices, expanding operations, and enlarging inventories. Salesmen in nearly all lines were confident that flush times would continue indefinitely. The statement of a clothing manufacturer made late in May is quite typical of the general attitude of the time. He said "price cutting in clothing is mistaken and nothing short of a nation-wide cataclysm could prevent prices next autumn averaging 30 per cent above those of spring," and that "increased production alone can bring down costs and retail selling must be governed by initial costs." The cataclysm came—and with it the adjustment of costs to selling prices instead of selling prices to costs.

Wholesale Prices

The prices of cattle, hides, pork, and cottonseed oil culminated in the autumn of 1919, and the price of silk in New York began to decline in January, 1920. Corn, cotton, sugar, and wheat turned downward in April and May, textiles began their decline in June, while iron, steel, and bituminous coal did not culminate until late in the year. The decline in general commodity prices during the thirteen months ending with June, 1921, was sharpened beyond all precedent. The situation is shown by Chart 1. The index of the Bureau of Labor Statistics fell from 272 to 148, or 46 per cent; Bradstreet's fell from $20.87 to $10.62 or 49 per cent; while the index based upon ten leading commodities, chosen because they are varied in nature, important in industry and unusually sensitive in price, fell from 277 to 107, or 61 per cent. The drastic decline in commodity prices revealed by these figures means that the business houses and banks of this country have been subject to great financial strain. Although there was no breakdown in credit, the drastic fall of commodity prices caused the failure of a large number of business concerns and forced others into the hands of their bankers.

Another index that shows what happened to one class of prices in 1920 is the Aberthaw index of building costs. The cost of constructing a standard reinforced concrete factory building on July 1, 1920, relative to the cost in 1914 was 265. Since that date there has been a steady decline to 153 on December 1, 1921.

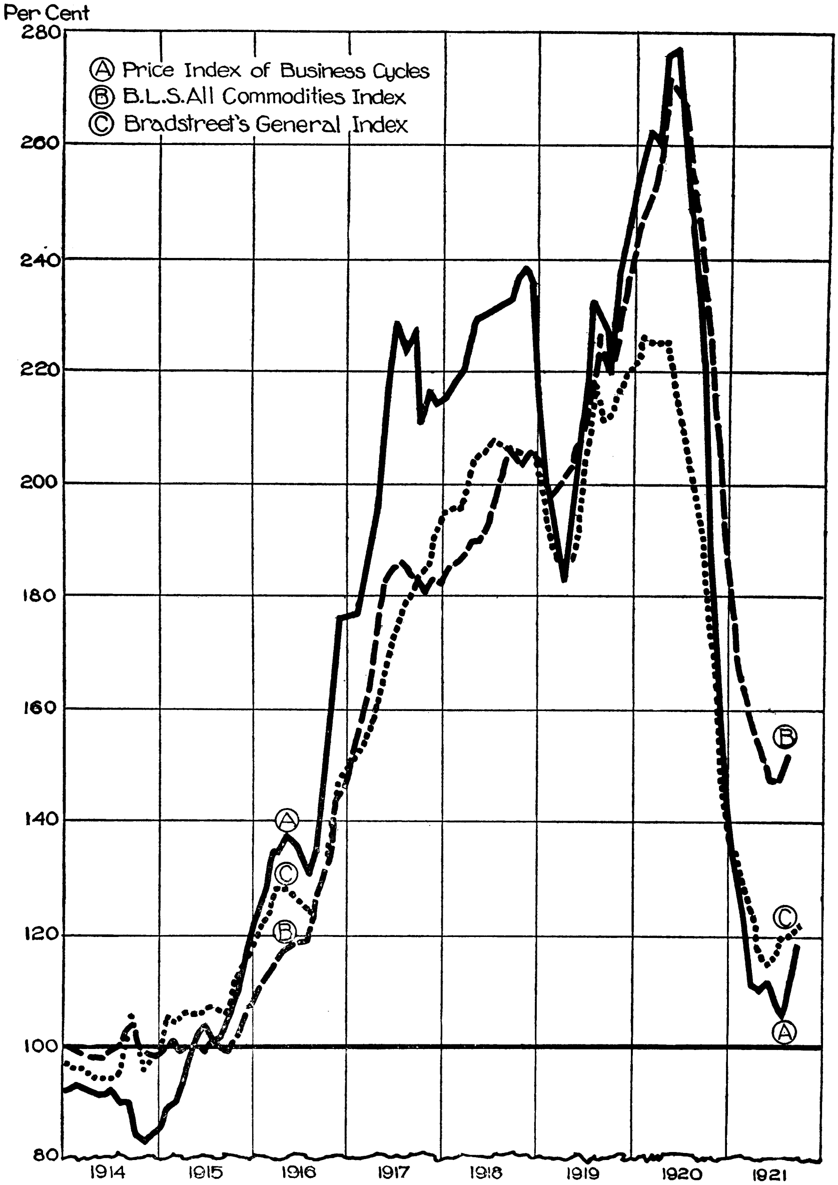

Chart I.—The (A) Ten Commodity Price Index of Business Cycles Compared with the (B) Price Index of the United States Bureau of Labor Statistics for All Commodities and with (C) Bradstreet's General Index of Commodity Prices, Monthly, 1914-21.

(Average for 1913=100)

In other words, the decline in the actual cost of building from the high point of 1920 is about the same as that in general wholesale prices.

The price relationships among various commodities and groups of commodities are now, after the price upheaval accompanying the war and the drastic declines of 1920-21, strikingly different from those of 1913 and other pre-war years. Grain, live stock, meat products, hides, leather, and metals are relatively cheap compared with textiles, coal, and building materials. This dislocation seriously curtails the purchasing power of important groups of consumers.

Unusual or abnormal as the present situation seems on the surface, similar situations have, nevertheless, been recurrent in the past. The price situation of the present period of business depression differs from that of similar periods of the past in degree rather than in kind, while the relatively low price at present of many raw materials and of other articles used in production is a favorable circumstance for manufacturing activity.

Two types of changes are always taking place in the price movement of individual commodities. The first is the long-time change, which means that a single commodity is becoming cheaper or dearer during a number of years. The long-time trends of the prices of different commodities differ greatly; some tend to rise rapidly, others slowly, some to decrease. The result of these differences, over a number of years, is to change radically price relationships; certain commodities, for instance, growing dearer, command in exchange larger and larger amounts of those growing cheaper.

The second type of change is the fluctuation accompanying the business cycle, that is, low prices for most commodities in times of depression, and high prices in times of prosperity. This, likewise, affects commodities unequally; certain of them fluctuate violently, others only slightly, from times of prosperity to times of depression. Like depressions of the past, today's depression has created great disparities in commodity price relationships when compared with those of a period of business expansion. Thus, many raw materials are relatively cheap compared with finished products; whereas during the months of prosperity preceding the crisis of 1920 the reverse relationship generally obtained.

The extent of the price decline which occurred in 1920-21 was

unparalleled; the irregularity of the decline, however, in which certain basic commodities reached very much lower points than did commodities in general, is "normal" for a period of business recession. Only the degree of the irregularity is unusual. The price situation in which we now find ourselves in 1921, therefore, is not unprecedented. Rather, it is a situation to be expected in the present phase of the business cycle. Price changes are in prospect, as they always are in prospect; it is probable that the prices of certain groups of commodities will advance very much more than will the prices of other groups, as always occurs when business is rising from the trough of depression. Our analysis leads us to the conclusion, consequently, that although many considerable price changes have occurred and others are in prospect, the present maladjustment of prices is merely the result of a somewhat greater disturbance than is usual in the present phase of the business cycle.[1]

Wages and Cost of Living

During 1919-20 wage rates increased as promptly and largely as the cost of living. Between May, 1919, and May, 1920, the rates of union wages per hour increased from 155 to 199, relative to rates in May, 1913, as 100; the rates of wages per full time week increased from 148 to 189.[2] During the same interval the retail prices of 22 articles of food increased from 185 to 215 relative to the average for 1913 as 100.[3] The cost of living figures compiled by the United States Bureau of Labor Statistics increased from 177 in June 1919, to 217 in June, 1920.[4] That is to say, during the year of expansion from the spring of 1919 to the spring of 1920 union wage rates increased nearly 30 per cent, retail food prices 16 per cent, and the cost of living about 23 per cent.

In September, 1921, (the last month for which figures are available at this writing) the Bureau's index of the cost of living in the United States was precisely the same as that of June, 1919, namely 177.[5] Among the five items of the budget (food, clothing, housing, fuel and light, furniture and furnishings, and miscella-

[1] *Special Letter* (November 8, 1921) of the Harvard University Committee on Economic Research on "The Commodity Price Situation," pp. 1 and 7.
[2] *Monthly Labor Review*, March 1921, p. 64.
[3] *Ibid.*, February 1921, p. 21.
[4] *Ibid.*, p. 61.
[5] *Ibid.*, November 1921, p. 83.

neous) food shows the greatest decline from the peak of June, 1920, now being 53 per cent above the figure for December, 1914. Housing, fuel and light, and miscellaneous items have been stable for the past year while food, clothing, and furniture have declined in price. The retail prices of food declined from the maximum of 219 in June, 1920, to the minimum of 144 in June, 1921, a figure slightly below the average (146) for 1917, representing a decrease from the peak of nearly 35 per cent.

The index of union wage rates per hour actually increased during the year ending May, 1921 (see Table I). It is probable,

I.—Relative Union Wage Scales, Retail Prices of Food and Cost of Living

	1913	1919	1920	1921
Rates of wages per hour	100 (May)	155 (May)	199 (May)	205 (May)
Retail food prices	100 (year)	184 (June)	219 (June)	153 (Sept)
Cost of living	100 (year)	177 (June)	217 (June)	177 (Sept)

II.—Relative Cost of Living in the United States
(Average for 1913=100)

	June 1919	June 1920	May 1921	Sept. 1921
Food	184.0	219.0	144.7	153.1
Clothing	214.5	287.5	222.6	192.1
Housing	114.2	134.9	159.0	160.0
Fuel and light	145.6	171.9	181.6	180.7
Furniture	225.1	292.7	247.7	224.7
Miscellaneous	173.2	201.4	208.8	207.8
Total	177.3	216.5	180.4	177.3

however, that rates have declined since last spring, that non-union rates have declined more than union rates,[6] and that an index of general wage rates would not be above 180 at the present time. In other words real wage rates are probably at about their 1913 level.

The Volume of Production

The total physical production in 1919 in the United States of twelve leading crops, constituting more than four-fifths of the total value of all crops, was greater than for any previous year

[6] *Ibid.*, p. 71. The American Telephone and Telegraph Co.'s compilations show a reduction in earnings of about 25 per cent for the U. S. Bureau's figures and 15 per cent for those of the New York Department of Labor.

except 1915 and 1912.[7] The figure for the volume of crops produced in 1919 is 109.1 per cent of the average for 1909-13. If allowance be made for growth, an estimate be made of a "normal" crop for 1919, and the actual production be expressed relative to the estimated normal, we get an "adjusted index" of 96.5 per cent.[8] In other words, the physical volume of crops produced in 1919 was about 3.5 per cent below normal. In 1920 the total physical production of the twelve leading crops reached a new high record. The index for that year was 119.4 compared with the aver-

III—Annual Indices of the Physical Volume of Production
(Average for 1909-13=100)

	1918	1919	1920	1921
Agriculture	107	109	119	99
Mining	136	111	124	..
Manufacture	125	114	115	..
	(Estimated "normal" = 100)			
Agriculture	96	97	103	87
Mining	107	85	93	..
Manufacture	104	91	...	..

age for 1909-13 as 100. The adjusted index was 103.0. In1921 the unadjusted index for agriculture was 99.1 and the adjusted index, 86.5. During the past three years, therefore, the crop output was 96.5, 103.0, and 86.5, respectively, of estimated normal for those years. In 1921 there is a very large corn crop, but the leading cash crops, cotton and wheat, are much below estimated normal.

It is not the output of agriculture, however, but of mining and manufacture that changes with the business cycle. The total output of ten leading minerals in 1919 was 110.8 of the average production for 1909-13, compared with the record figure of 135.6 in 1918. In 1920 there was a recovery to 123.9, a figure which exceeds that of every previous year except the three war years 1916, 1917, and 1918. Compared with estimated normal the production of 1919 and 1920, respectively, was 85.2 per cent and 93.2 per cent. In the upward swing of 1919-20 the production of minerals in general did not reach maximum until the

[7] See an "Index of the Physical Volume of Production," E. E. Day, *Review of Economic Statistics,* September 1920, p. 10.

[8] *Ibid.,* p. 14.

[9] See the *Review of Economic Statistics* for February 1921, pp. 37-39, for estimates of the volume production for 1920.

second half of 1920. Since the autumn of 1920 the monthly production of coal, iron, copper, and other minerals has declined greatly. The production in the first ten months of 1921 of the most important minerals, bituminous coal and pig iron, constituting together more than half of the value of all minerals included

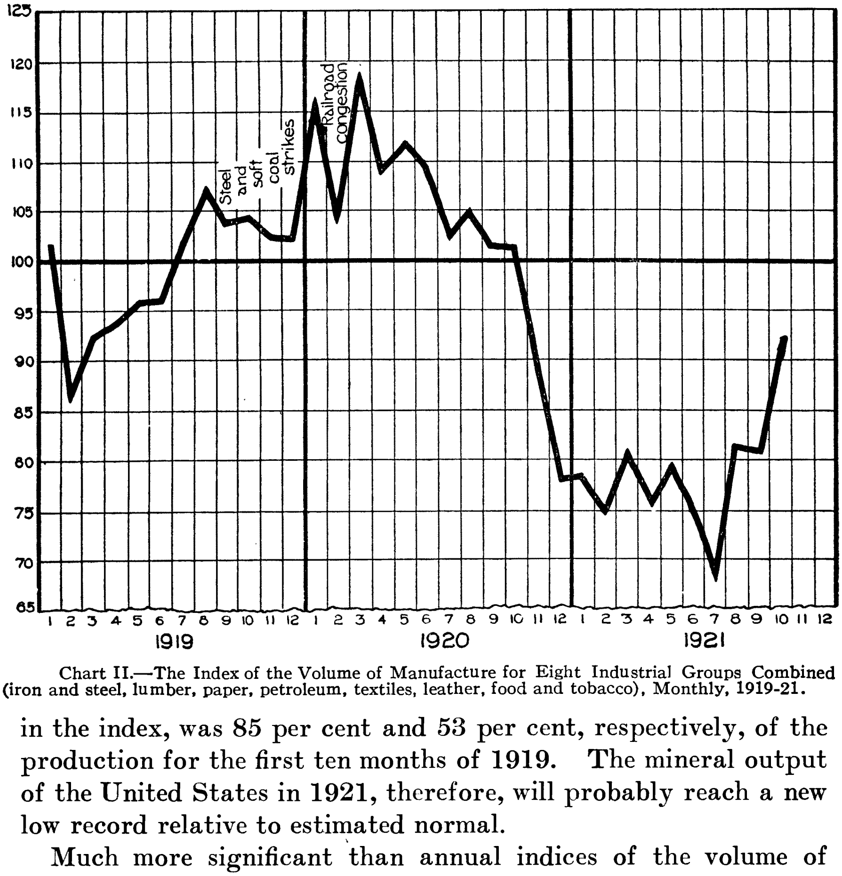

Chart II.—The Index of the Volume of Manufacture for Eight Industrial Groups Combined (iron and steel, lumber, paper, petroleum, textiles, leather, food and tobacco), Monthly, 1919-21.

in the index, was 85 per cent and 53 per cent, respectively, of the production for the first ten months of 1919. The mineral output of the United States in 1921, therefore, will probably reach a new low record relative to estimated normal.

Much more significant than annual indices of the volume of manufacture are the monthly indices which have been constructed by Professor E. E. Day. Chart II shows his combined index based upon figures for the iron and steel, lumber, paper, petroleum, textile, leather, food, and tobacco industries.

"The index discloses clearly the extent, as well as the timing, of the fluctuations of manufacturing output since January, 1919. The slump following the Armistice reduced production nearly 15 per cent below the 1919 average. The succeeding boom carried

it 18 per cent above this average. The depression of recent months has been a more extreme movement. From January to June, production ran consistently between 20 and 25 per cent below the 1919 average and in July it touched the lowest point recorded, of 31.5 per cent below."[10]

Examination of the figures for the individual groups shows that there are differences in the timing of the significant movements of the production of various industries. "Thus the leather group was the first to experience the larger cyclical reaction after passing the post-armistice sag. As early as November-December, 1919, production in this group was receding. The food group followed suit almost immediately. Textiles broke in May. Upon the other hand, the most important group of all, iron and steel, after a temporary relapse in April, ran production upon a high level until October, 1920. The paper group likewise suffered no marked decline until November. And the petroleum trade did not show weakness until mid-winter."

"Similar differences appear in the periods at which the several groups of industries reached and passed the trough of the prevailing depression. The textile, lumber, leather, and tobacco groups apparently touched bottom between last December and February. All of these except leather have since returned nearly, if not fully, to the average level of 1919. The petroleum trade showed production well above the 1919 average even after its mid-winter weakness. Only iron and steel and paper, the last two to decline, failed to turn the corner toward recovery during the first six months of the year."[11]

Comparison of prices and production of commodities in 1919-21 shows agreement in the general movements of the two. Prices and production rose to a maximum in the spring of 1920. Exorbitant prices, maximum unfilled orders, and the cry of "underproduction" were leading features of the situation immediately preceding the crisis. Then the market broke, orders were cancelled, stocks accumulated and both prices and production fell precipitately to a minimum in the spring of 1921. In the autumn of 1921 the volume of manufacture increased, but to a point 20 per cent below the 1919 average.

The figures for the average volume of manufacture during the

[10] *Special Letter* of the Harvard University Committee on Economic Research for September 23, p. 3.
[11] *Ibid.*, pp. 4-6.

first nine months of 1921 and 1920, relative to the volume for the corresponding period in 1919 as 100, are 80 and 111, respectively.[12] For manufacture, as for mining, it is probable that the complete figures for 1921 will show output relative to estimated normal at a new low record. The monthly figures up to October indicate, however, that after a sidewise movement in the summer of 1921 both prices and production are now showing an unmistakable though halting tendency to rise from the depths of depression.

The Volume of Domestic and Foreign Trade

The dollar value of domestic trade for the first eleven months of 1921, as revealed by bank clearings of 190 cities excluding New York City, shows decreases of 22 per cent and 10 per cent, compared with the corresponding periods of 1920 and 1919, respectively.[13] This decline in 1921 is of course primarily the result of the collapse of prices. Much more significant than the change in the value of domestic trade is the change in physical volume. An index of the physical volume of goods moving is available in the figures for freight car loadings. In 1921 the shipments of grain and grain products, merchandise, and "less than carload lots" are greater than in 1920 while the shipments of coal, coke, and forest products are very much less than in 1920. The numbers of freight cars loaded during the first 48 weeks of 1921, 1920, and 1919, are, respectively, 37,200,000, 43,000,000, and 39,500,000. That is, freight-car loadings for the first eleven months of 1921 and 1920 are 94 and 109 per cent, respectively, of those for the corresponding period of 1919. Comparing these indices of the volume of freight moved with the indices of the volume of manufacture, quoted above, we find that manufacture and transport of goods increased 11 and 9 per cent, respectively, in 1920 compared with 1919 and decreased 28 and 13 per cent, respectively, in 1921 compared with 1920. In other words, it appears that the manufacture of goods declined very much more after the crisis of 1920 than the distribution of goods.

Total sales of the two leading mail-order houses, Sears-Roebuck and Montgomery Ward, for the first ten months of 1921 were $206,000,000 compared with $301,000,000 for the

[12]These figures are the averages of the monthly indicies of production relative to corresponding period for 1919 as 100. See *Special Letter* of November 26, 1921.

[13]*Commercial and Financial Chronicle,* December 10, 1921, p. 2435.

corresponding period of 1920, a decline of 32 per cent. The sales of five leading "chain" stores actually increased over 4.3 per cent during the same period. The sales of department stores, reporting to the federal reserve banks, for the four months July-October, 1921, were 12.4 per cent less than for the corresponding period of 1920. A fair inference from these figures seems to be that, considering the price declines of the year, the volume of goods being distributed by retail is not far below that of a year ago.[14]

The subject of foreign trade occupies a leading place in current discussions of the business situation. Many writers hold that the large volume of our foreign trade in 1919 was mainly responsible for our business prosperity in that year and that the recent decline of our foreign trade is largely responsible for the present depression.

In 1919 our total foreign trade reached the record figure of $12,154,000,000, with merchandise exports at $8,161,000,000 and imports of $3,393,000,000.[15] Despite the decline of prices in 1920, our foreign trade reached a new record figure of $13,711-000,000 with merchandise exports of $8,343,000,000 and imports of $5,368,000,000.[16] The figures for 1921 show a spectacular decline in values. During the first ten months of 1921 our total foreign trade has averaged little more than half of the 1920 monthly average. The value of goods imported turned downward definitely in September, 1920, but a significant decline in exports did not appear until February, 1921.

To determine the real significance of this reduction of our foreign trade to about one-half of its former value indices of the physical volume of exports have been computed by Professor John H. Williams. The index based on 175 selected commodities, representing about three-fourths of our exports in 1919, "shows that the physical volume of exports in 1920 was 94.1 per cent of the volume exported in 1919. In other words, there was a fall of 5.9 per cent in the quantity of exports last year compared with the year before. An index, similarly constructed, but based on 50 selected commodities comprising 63 per cent of the exports in 1920, shows that the physical volume of exports in the first

[14]*Bradstreet's*, December 3, 1921, p. 791.

[15]These figures include merchandise and silver. See *Supplement* to the *Review of Economic Statistics*, April 1920, p. 5.

[16]See *Supplement* to the *Review*, July 1921, p. 170.

three quarters of this year (1921) was 94.0 per cent of the quantity exported in the same period last year."[17]

That is to say, the increase in the value of our exports in 1920 over 1919 resulted from an increase of prices and in spite of a decline of about 6 per cent in quantity, whereas the "pronounced decline of our export trade this year has been for the most part but the expression of falling prices."[18] This is a fact of the greatest significance.

Analysis of the quantity figures for merchandise exports reveals clearly the reason for the moderate decline in the physical volume of exports in 1921. There were very large increases in the exports of agricultural commodities such as, corn, wheat, lard, cottonseed oil, barley, and rice, so that in 1921 Europe bought our foodstuffs in great physical volume than ever before. Cotton, our leading export, increased 6 per cent in quantity although it decreased 63 per cent in value, while wheat, our next most important export, increased 82 per cent in quantity and only 4 per cent in value in the first nine months of 1921 compared with the similar period of 1920.

Pointing out the stability of the trade balance in the figures for 1920 and 1921, Professor Williams justly remarks, "it seems clearer than ever that there will be no radical disturbance of the trade balance until Europe begins the payment of the interest charges, now amouting to about $522,000,000 a year, upon our government's credits advanced during the war and early post-war period."[19]

Credit and Banking

At the end of November, 1918, the reserve ratio of the combined federal reserve banks was an even 50 per cent, total cash reserves were $2,120,000,000, federal reserve notes in circulation amounted to $2,569,000,000, the minimum rate of rediscount was 4 per cent, and the prevailing rate on commercial paper was 6 per cent. After recovering to 53.7 per cent on June 6, 1919, the reserve ratio declined during the remainder of 1919 and until the spring of 1920, when the ratio reached a minimum of 42.2 per cent.

Although cash reserves and the reserve ratio reached minimum in the spring of 1920, the peak of expansion of the banking system

[17] *Special Letter* of the Harvard University Committee on Economic Research, December 10, 1921, pp. 2-3.
[18] *Ibid.*, p. 3.
[19] *Ibid.*, p. 6.

of the United States did not occur until late autumn of that year, as is evident from Chart III. The maximum expansion of loans and investments of member banks was reached on October 15. On November 5 the figures for total earning assets, paper discounted by the federal reserve banks, and accommodations extended to member banks reached the peak, although federal reserve notes in circulation did not reach maximum, $3,405,000,000, until December 24, 1920.

The reserve ratios, before interbank accomodation, of the various federal reserve banks show that the strain was felt first in the East (Boston, New York, and Philadelphia) and then in the West and South, although San Francisco has only been slightly affected. Recovery has been in reverse order, but it is marked for all banks.

During 1921 there has been a steady decline in earning assets, bills discounted, and accommodations to member banks. The re-

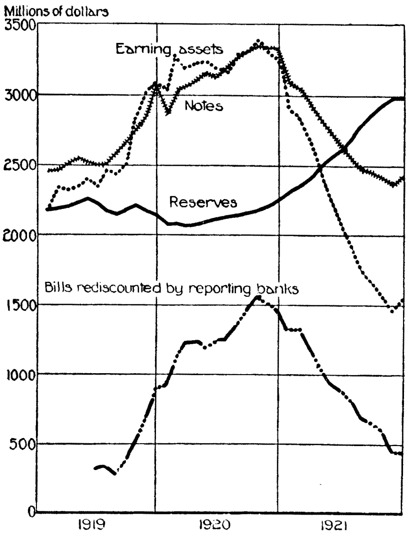

Chart III.—Selected Items from the Statements of the Combined Federal Reserve Banks, at the end of each month, 1919-21.

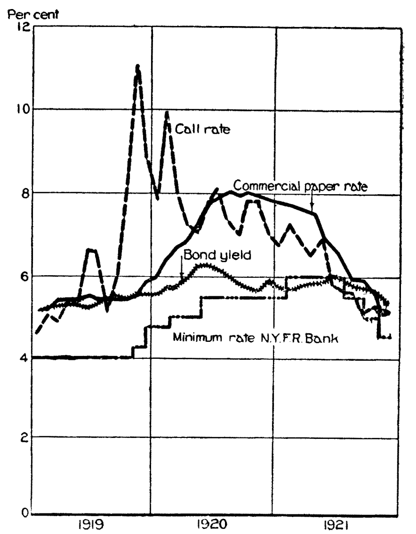

Chart IV.—Short and Time Money Rates in New York City, and Average Bond Yield, Monthly, 1919-21.

serve ratio has risen to 73 per cent and total cash reserves to three billion dollars.

The great improvement of the reserve ratio in 1921 has been, primarily, the result of two factors, a decrease in federal reserve

notes and a remarkable increase in gold reserves. During the eleven months ending with November, 1921, the excess of gold imports over exports was over 638 millions, an average of $58,000,000 per month. This constitutes a new high record of net gold imports. In the years 1915 and 1916, when the United States was receiving a flood of gold from Europe for war orders, the monthly averages were only $35,000,000 and $44,000,000, respectively.

Chart IV shows the reflection in money rates of the financial strain of 1919-20. Call rates in New York reached maximum in November, 1919, and have since declined quite steadily. The rate on 60-90 day commercial paper, registering the demands of business rather than speculation, did not reach the maximum of 8 per cent until August-November, 1920, while the minimum rate of rediscount of the New York Federal Reserve Bank did not reach its highest point, 6 per cent, until February, 1921.

The outstanding feature of 1921 is the declining tendency of all rates, a tendency especially marked since the middle of the year. In December the rate on commercial paper is 5 to 5¼ per cent and the minimum rate of discount of the various federal reserve banks ranges from 4½ to 5½ per cent.

Summary and Conclusion

A survey of the events preceding and following the crisis of 1920 reveals the presence of the familiar sequence of events in business cycles—rise of security and commodity prices, increased production, money strain, reckless expansion, collapse of security and commodity markets, cancellation of orders, shrinkage of inventories, failures, decreased production, business stagnation, increasing bank reserves, and lower money rates. The difficulties which business encountered in 1920 were, in the main, the same sort of difficulties that business had encountered in previous crises. But there were some new elements in the situation which, in some cases, added to the embarrassments.

The general rise of prices in 1919-20, unparalleled in peace times, was facilitated by government bond issues and the machinery of the federal reserve system; it was intensified by large foreign demands for goods and the difficulties of changing from a war to a peace basis. The collapse of the exchanges added new difficulties to concerns engaged in foreign trade. High taxes were a factor contributing to insolvency when prices turned

downward. The rates of surtax levied upon large incomes have been so heavy as to divert investment from taxable securities to non-taxable government and municipal bonds. These are factors, however, which intensified rather than caused the crisis of 1920.

Let us appraise the situation in which we find ourselves at the end of 1921. Are there elements present which indicate business revival in 1922? Or, are we facing the disappearance of our foreign trade, greatly curtailed purchasing power of agricultural communities, and business depression? The significant elements of the situation which, as I judge them, indicate that revival rather than depression is probable in 1922 are the following:

1. The production of manufactured articles was very much curtailed in 1920-21.
2. The distribution and domestic consumption of goods during the past year were considerably greater than production.
3. The decline in the quantity of goods exported in 1921 was not large. The exports of food products increased materially. In our foreign trade figures there is no evidence that the purchasing power of Europe is seriously curtailed.
4. Real wage rates per hour appear to be about the same as they were in 1913. With cost of living at 177 per cent, wage rates at about 180 per cent, and wholesale prices at 150 per cent of the 1913 figures, and the downward trend of wholesale prices arrested it does not appear that a general downward revision of wages is called for. The line of least resistance toward rectifying the present price maladjustment is an increase in the prices of agricultural products.
5. The gold reserves of the federal reserve banks have greatly increased, while notes in circulation and accomodations to member banks have declined.
6. Money rates have fallen greatly; credit is available and is being utilized in the security markets; bond issues find ready sale.
7. The availability of credit at low money rates combined with a volume of manufacturing output less than current consumption and a fair amount of foreign trade will result in increased business activity and an upward movement of commodity prices in 1922.